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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,267	07/23/2003	Michael C. Breslin	28810/04002	8405

24024 7590 10/18/2005

CALFEE HALTER & GRISWOLD, LLP  
800 SUPERIOR AVENUE  
SUITE 1400  
CLEVELAND, OH 44114

EXAMINER

SAVAGE, JASON L

ART UNIT PAPER NUMBER

1775

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/625,267

Applicant(s)

BRESLIN ET AL.

Examiner

Jason L. Savage

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 24-37 and 42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 and 38-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 20040126, 20040601.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

***Information Disclosure Statement***

The information disclosure statements (IDS) submitted on 01-26-04 and 06-01-04 have been considered by the examiner. Regarding the references AC, AD and AQ on the IDS filed 06-01-04, these were not initialed since they had been previously cited on the IDS filed 01-26-04 and designated as references AL, AJ and AT respectively.

***Election/Restrictions***

Applicant's election of the claims of Group I, claims 1-23 and 38-41 in the paper filed 9-26-05 has been noted. Claims 24-37 and 42 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 9-26-05.

Applicant argued that the restriction was improper since the Examiner has not established that there is a serious burden on the Examiner to examine all of the claimed inventions. However, as was pointed out in the prior restriction, the examination of Group II would require additional searching in areas that would not be required for the invention of Group I such as a search in class 164, subclass 98. As such, the restriction for examination purposes as indicated is proper and considered FINAL.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 8, 12-14, 16, 18, 20 and 22-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Lesher et al. (US 4,921,818).

Lesher teaches a composite of a ceramic and metal comprising a silicon carbide having a silica film which is infiltrated with aluminum to form an oxidation reaction product (col. 4, ln. 12-42). The reaction product of the Lesher composite would be an alumina-aluminum binding phase just as that claimed by Applicant. Regarding the limitation that the composite material has been substantially fully reacted with aluminum, Lesher teaches it is understood that all of the doping silica film may be utilized (col. 4, ln. 43-61).

Regarding claims 2, 12 and 14, the silicon carbide ceramic portion would meet the limitation of being a material that is substantially non-reactive with aluminum.

Regarding claim 4, Lesher teaches the particulate silicon carbide size may be 250 or 750 mesh (col. 7, ln. 21-36) and further teaches it may be between 10-1000 mesh (col. 8, ln. 1-10) which falls within the particle size range claimed by Applicant.

Regarding claim 8, Lesher teaches that the composite may comprise a continuous interconnected ceramic portion (col. 11, ln. 59-68).

Regarding claims 16, 18, 20 and 22, the claim limitations are drawn to an intended uses of the composite material. Lesher teaches that the composite is adaptable or fabricated for use as articles of commerce which includes industrial, structural and technical ceramic bodies for such applications where electrical, wear,

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thermal, structural, or other feature or properties are important or beneficial (col. 5, ln. 26-34). Furthermore, the composite of Lesher would be just as capable of having a surface that could be exposed to friction or wear and be just as capable of functioning as an electrical conductor, thermal management device and absorbing and dissipating kinetic energy from high velocity projectiles since the composite of Lesher has the same structure and materials as the composite claimed by Applicant.

Claims 1-14, 16, 18, 20 and 22-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Dhandapani et al. (Article – Growth and Microstructure of  $\text{Al}_2\text{O}_3$ -SiC-Si(Al) Composites Prepared by Reactive Infiltration of Silicon Carbide Preforms).

Dhandapani teaches a composite of a ceramic and metal comprising a silicon carbide having a silica layer which is infiltrated with aluminum to form the composite reacted product (p. 649, col. 2 last paragraph). Dhandapani teaches that the thus formed product contains a silicon carbide ceramic portion and an aluminum-aluminum binding phase (p. 651 and p.652, Table 1). Regarding the limitation that the composite material has been substantially fully reacted with aluminum, since Dhandapani teaches that no silica is contained in the formed product (p. 652, Table 1), it would meet the limitation of being fully reacted with aluminum.

Regarding claims 2, 12 and 14, Dhandapani teaches that no reaction occurs between the aluminum melt and ceramic material preform (p. 649, col. 2, first full paragraph).

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Regarding claims 4-7 and 9-11, Dhandapani teaches the particulate silicon carbide size used was between 5-300  $\mu\text{m}$ , the silicon carbide vol. % is 34-67%, 12-43 vol. % aluminum oxide and 2.5-21.2 vol. % aluminum and zero% silica (p. 652, Table 1).

Regarding claim 8, Dhandapani teaches that the composite may comprise a continuous interconnected ceramic portion (col. 11, ln. 59-68).

Regarding claims 16, 18, 20 and 22, the claim limitations are drawn to an intended uses of the composite material. The composite of Dhandapani would be just as capable of having a surface that could be exposed to friction or wear and be just as capable of functioning as an electrical conductor, thermal management device and absorbing and dissipating kinetic energy from high velocity projectiles since the composite of Dhandapani has the same structure and materials as the composite claimed by Applicant.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 15, 17, 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Applicant claims that composite is used in an wide variety of articles. While Lesher is silent to the use of the composite in such applications, it does teach that the

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composite is adaptable or fabricated for use as articles of commerce which includes industrial, structural and technical ceramic bodies for such applications where electrical, wear, thermal, structural, or other feature or properties are important or beneficial (col. 5, ln. 26-34). It would have been within the purview of one of ordinary skill in the art to recognize what articles could make use of the composite of Lesher with a reasonable expectation of success. Absent a teaching of the criticality or showing of unexpected results from using the claimed composite in the specifically claimed articles, it would not provide a patentable distinction over the composite of Lesher which is taught as being suitable for use in similar applications.

Claims 15, 17, 19, 21 and 38-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dhandapani et al. (Article – Growth and Microstructure of  $\text{Al}_2\text{O}_3$ -SiC-Si(Al) Composites Prepared by Reactive Infiltration of Silicon Carbide Preforms).

Regarding claims 15, 17, 19, 21 and 41, Applicant claims that composite is used in an wide variety of articles. While Dhandapani is silent to the use of the composite in such applications, it would have been within the purview of one of ordinary skill in the art to recognize what articles could make use of the composite of Dhandapani with a reasonable expectation of success. Absent a teaching of the criticality or showing of unexpected results from using the claimed composite in the claimed articles, it would not provide a patentable distinction over the composite of Dhandapani.

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Regarding claim 38, although Dhandapani does not exemplify an embodiment wherein the molten aluminum metal used in forming the composite comprises between 18 to 95 weight percent silicon, it does exemplify an embodiment containing 12 weight percent silicon (p. 650, 1<sup>st</sup> par. In Experimental section). Dhandapani further exemplifies that the SiC content in the composite has a volume percent of at least about 50 (p. 652, Table 1). In a claim directed to a product, it is the product itself which must be new and unobvious. In re Pilkington 162 U.S.P.Q. 145,147 (C.C.P.A. 1969). Absent a teaching or showing how the composite of the claimed invention using a metal containing at least 18 weight percent silicon would have a material difference in the final product compared to the composite of Dhandapani which uses a metal containing 12 weight percent silicon, it would not provide a patentable distinction over the prior art. Furthermore, it would have been obvious to one of ordinary skill in the art to have used conventional aluminum silicon alloys having any silicon content including ones that fall within the range claimed by Applicant with a reasonable expectation of success. Absent a teaching of the criticality or showing of unexpected results from the claimed silicon content in the metal, it would not provide a patentable distinction over the prior art.

Regarding claim 40, the composite of Dhandapani would meet the limitation of the article having the same shape and size as the preform since the article of Dhandapani is the preform.



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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Savage whose telephone number is 571-272-1542. The examiner can normally be reached on M-F 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on 571-272-1535. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jason Savage  
10-11-05



DEBORAH JONES  
SUPERVISORY PATENT EXAMINER